

Appln. No. 10/730,785
Amendment After Final Rejection filed February 22, 2006
Response to Office Action mailed November 22, 2005

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Currently Amended) A liquid cartridge for supplying a liquid to a liquid ejecting apparatus through a liquid supplying needle thereof when mounted on said liquid ejecting apparatus, comprising:

a liquid accommodating section for containing a liquid;

a liquid supplying part, which communicates with said liquid accommodating section, said liquid supplying part including an opening into which the liquid supplying needle of the liquid ejecting apparatus is inserted; and

an atmospheric valve for sealing a communicating hole which allows said liquid accommodating section to communicate with atmosphere, said atmospheric valve moving substantially in a direction parallel to a direction in which the liquid supplying needle is inserted into said opening of said liquid supplying part when the liquid cartridge is mounted on said liquid ejecting apparatus, in association with a part of the liquid ejecting apparatus;

an elastic member that urges said atmospheric valve toward said communicating hole to seal said communicating hole; and

an atmospheric valve accommodating section for accommodating said atmospheric valve and said elastic member therein, said atmospheric valve communicating with said liquid accommodating section via a passage.

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2. (Currently Amended) A liquid cartridge as claimed in claim 1, ~~further comprising wherein said elastic member comprises a coil spring for urging said atmospheric valve toward said communicating hole in order to seal said communicating hole.~~

3. (Original) A liquid cartridge as claimed in claim 2, wherein said atmospheric valve comprises:

a guide part, which is of substantially cylindrical shape and inserted into said coil spring; and

a disc part, which has a diameter larger than said guide part and is urged by said coil spring in order to seal around said communicating hole, and

a notch part, which is cut in from a side into which said coil spring is inserted, being provided at said guide part.

4. (Currently Amended) ~~A liquid cartridge as claimed in claim 1~~ A liquid cartridge for supplying a liquid to a liquid ejecting apparatus through a liquid supplying needle thereof when mounted on said liquid ejecting apparatus, comprising:

a liquid accommodating section for containing a liquid;

a liquid supplying part, which communicates with said liquid accommodating section, said liquid supplying part including an opening into which the liquid supplying needle of the liquid ejecting apparatus is inserted; and

an atmospheric valve for sealing a communicating hole which allows said liquid accommodating section to communicate with atmosphere, said atmospheric valve moving substantially in a direction parallel to a direction in which the liquid supplying needle is inserted

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into said opening of said liquid supplying part when the liquid cartridge is mounted on said liquid ejecting apparatus, wherein said atmospheric valve comprises:

a sealing part, which is urged in order to seal around said communicating hole;

and

a shaft part, which extends from said sealing part, is inserted into said communicating hole and touches said communicating hole internally at a plurality of places, wherein

a gap is formed between said shaft part and said communicating hole.

5. (Currently Amended) ~~A liquid cartridge as claimed in claim 1~~ A liquid cartridge for supplying a liquid to a liquid ejecting apparatus through a liquid supplying needle thereof when mounted on said liquid ejecting apparatus, comprising:

a liquid accommodating section for containing a liquid;

a liquid supplying part, which communicates with said liquid accommodating section, said liquid supplying part including an opening into which the liquid supplying needle of the liquid ejecting apparatus is inserted; and

an atmospheric valve for sealing a communicating hole which allows said liquid accommodating section to communicate with atmosphere, said atmospheric valve moving substantially in a direction parallel to a direction in which the liquid supplying needle is inserted into said opening of said liquid supplying part when the liquid cartridge is mounted on said liquid ejecting apparatus,

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wherein a film is formed at a part of said liquid cartridge, with which a contact member of said liquid ejecting apparatus is in contact, and said atmospheric valve is moved by being pushed by said contact member via said film having a flexure.

6. (Currently Amended) ~~A liquid cartridge as claimed in claim 1, A liquid cartridge for supplying a liquid to a liquid ejecting apparatus through a liquid supplying needle thereof when mounted on said liquid ejecting apparatus, comprising:~~

a liquid accommodating section for containing a liquid;

a liquid supplying part, which communicates with said liquid accommodating section, said liquid supplying part including an opening into which the liquid supplying needle of the liquid ejecting apparatus is inserted; and

an atmospheric valve for sealing a communicating hole which allows said liquid accommodating section to communicate with atmosphere, said atmospheric valve moving substantially in a direction parallel to a direction in which the liquid supplying needle is inserted into said opening of said liquid supplying part when the liquid cartridge is mounted on said liquid ejecting apparatus.

further comprising a liquid keeping part, which is provided at a position closer to atmosphere than said communicating hole, below said atmospheric valve and said communicating hole, for keeping a liquid, which flows out of said communicating hole.

7. (Original) A liquid cartridge as claimed in claim 6, wherein a keeping part communicating hole is provided at an upper part of said liquid keeping part to allow atmosphere and said communicating hole of said liquid accommodating section to communicate.

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8. (Original) A liquid cartridge as claimed in claim 6, wherein said liquid keeping part comprises a hollow part, of which a bottom face is opened, and a film for sealing said hollow part, and

said liquid cartridge further comprises an atmospheric valve pushing member, which is contained in said hollow part of said liquid keeping part, for pushing up said atmospheric valve by said contact member formed at said liquid ejecting apparatus via said film.

9. (Original) A liquid cartridge as claimed in claim 8, wherein a flexure is provided at said film in order that said contact member of said liquid ejecting apparatus can push up said atmospheric valve pushing member via said film until said atmospheric valve opens said communicating hole.

10. (Original) A liquid cartridge as claimed in claim 1, further comprising a seal film for blocking between said liquid accommodating section and said communicating hole, and a tearing means for tearing said seal film when said liquid cartridge is mounted on said liquid ejecting apparatus.

11. (Original) A liquid cartridge as claimed in claim 1, further comprising an attaching part on which a memory is attached, of which a side face is positioned by the liquid ejecting apparatus, wherein said atmospheric valve is arranged near said attaching part.

12. (Original) A liquid cartridge mounted while being in contact with a part of a liquid ejecting apparatus and turning around said liquid ejecting apparatus, comprising:
a liquid accommodating section for containing a liquid;

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a liquid supplying part, which communicates with said liquid accommodating section and has a supply valve pushed up by a liquid supplying needle when said liquid supplying needle of said liquid ejecting apparatus is inserted; and

an atmospheric valve for sealing a communicating hole which allows said liquid accommodating section to communicate with atmosphere, while opening said communicating hole by being moved by a contact member formed at said liquid ejecting apparatus in a direction substantially parallel to a direction, in which said liquid supplying needle is inserted into said liquid supplying part, when said liquid ejecting apparatus is mounted, wherein

an angle, by which said liquid cartridge turns around said liquid ejecting apparatus in order that said atmospheric valve is in contact with said contact member of said liquid ejecting apparatus taking a point at which said liquid cartridge turns around said liquid ejecting apparatus as an axis, is smaller than an angle, by which said liquid cartridge turns around said liquid ejecting apparatus taking said point as an axis in order that said supply valve is in contact with said liquid supplying needle.

13. (Original) A liquid cartridge mounted while being in contact with a part of a liquid ejecting apparatus and turning around said liquid ejecting apparatus, comprising:

a liquid accommodating section for containing a liquid;

a liquid supplying part, which communicates with said liquid accommodating section and a liquid supplying needle of said liquid ejecting apparatus is inserted into; and

an atmospheric valve for sealing a communicating hole which allows said liquid accommodating section to communicate with atmosphere, while opening said communicating hole by being moved by a contact member formed at said liquid ejecting apparatus in a direction

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substantially parallel to a direction, in which said liquid supplying needle is inserted into said liquid supplying part, when said liquid ejecting apparatus is mounted, wherein

a contact part between said atmospheric valve and said contact member is provided at a position more closer to a point, at which said liquid cartridge turns around said liquid ejecting apparatus, than said liquid supplying part.

14. (Original) A liquid cartridge as claimed in claim 1, wherein said liquid supplying part comprises a supply valve, which is pushed up by said liquid supplying needle when said liquid supplying needle of said liquid ejecting apparatus is inserted, and

an angle, by which said liquid cartridge turns around said liquid ejecting apparatus in order that said atmospheric valve is in contact with said contact member of said liquid ejecting apparatus taking a point at which said liquid cartridge turns around said liquid ejecting apparatus as an axis, is smaller than an angle, by which said liquid cartridge turns around said liquid ejecting apparatus taking said point as an axis in order that said supply valve is in contact with said liquid supplying needle.

15. (Original) A liquid cartridge as claimed in claim 12 or claim 13, wherein said atmospheric valve comprises:

a sealing part, which is urged in order to seal around said communicating hole;
and

a shaft part, which extends from said sealing part, is inserted into said communicating hole and touches said communicating hole internally at a plurality of places, wherein

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a gap is formed between said shaft part and said communicating hole.

16. (Original) A liquid cartridge as claimed in claim 12 or claim 13, further comprising a liquid keeping part, which is provided at a position closer to atmosphere than said communicating hole, below said atmospheric valve and said communicating hole, for keeping a liquid, which flows out of said communicating hole.

17. (Original) A liquid cartridge as claimed in claim 16, wherein a keeping part communicating hole is provided at an upper part of said liquid keeping part to allow atmosphere and said communicating hole of said liquid accommodating section to communicate.

18. (Original) A liquid cartridge as claimed in claim 12 or claim 13, further comprising a seal film for blocking between said liquid accommodating section and said communicating hole, and

a tearing means for tearing said seal film when said liquid cartridge is mounted.

19. (Original) A liquid cartridge as claimed in claim 1, further comprising a check valve, which is provided between said liquid accommodating section and said communicating hole, for allowing atmosphere to flow from said communicating hole to said liquid accommodating section, and for inhibiting a liquid flowing from said liquid accommodating section to said communicating hole.